

CLAIMS:

1. A method for controlling valve patterns in at least  
a cylinder operating in a multi-stroke mode of an  
5 internal combustion engine, the method comprising:  
operating a first valve pattern in said  
cylinder operating in multi-stroke mode during at least a  
first engine operating condition; and  
operating a second valve pattern in said  
10 cylinder operating in multi-stroke mode during a second  
engine operating condition, said second operating  
condition different from said first operating condition.
2. The method of Claim 1 wherein said operating  
15 condition is an engine temperature.
3. The method of Claim 1 wherein said operating  
condition is engine speed.
- 20 4. The method of Claim 1 wherein said operating  
condition is engine load.
5. A method for determining a pattern of  
electromechanically actuated valves to operate in an  
25 internal combustion engine operating in a multi-stroke  
cylinder mode, the method comprising:  
determining an operating condition of said  
engine;  
operating at least one cylinder of said engine  
30 in a multi-stroke mode; and  
determining a pattern of electromechanically  
actuated valves to operate, based on said operating  
condition, in said at least one cylinder operating in a  
multi-stroke mode.

6. The method of Claim 5 wherein said operating condition is an engine temperature.

5 7. The method of Claim 5 wherein said operating condition is engine speed.

8. The method of Claim 5 wherein said operating condition is engine load.

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9. The method of Claim 5 wherein said operating condition is a temperature of a valve.

10. A method for determining a pattern of  
15 electromechanically actuated valves to operate in an internal combustion engine operating in a multi-stroke cylinder mode, the method comprising:

determining an operating condition of an electromechanically actuated valve;

20 operating at least one cylinder of said engine in a multi-stroke mode; and

determining a pattern of electromechanically actuated valves to operate, based on said operating condition, in said at least one cylinder operating in  
25 said multi-stroke mode.

11. The method of Claim 10 wherein said operating condition is a temperature of a valve actuator coupled to at least one of said electromechanically actuated valves.

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12. The method of Claim 11 wherein said valve actuator is comprised of at least an armature, a coil, and a core.

13. The method of Claim 10 wherein said operating condition of said electromechanically actuated valve is an impedance of a valve actuator coupled to at least one of said electromechanical actuated valves.

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14. The method of Claim 10 wherein said operating condition of said electromechanically actuated valve is a temperature of at least one of said electromechanically actuated valves.

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15. A method for controlling valve patterns in at least a cylinder operating in a multi-stroke mode of an internal combustion engine, the method comprising:

operating a first valve pattern in said  
15 cylinder operating in multi-stroke mode during at least a first valve operating condition; and

operating a second valve pattern in said  
cylinder operating in multi-stroke mode during a second valve operating condition, said second operating  
20 condition different from said first operating condition.

16. The method of Claim 15 wherein said valve operating condition is an operating condition of an electromechanical valve.

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17. A method for determining a valve pattern to operate in an internal combustion engine operating in a multi-stroke cylinder mode, the method comprising:

5 determining an operating condition of said engine;

operating at least two groups of cylinders, a first group operating in a first cylinder stroke mode, and a second group operating in a second cylinder stroke mode; and

10 determining a valve pattern to operate, based on said operating condition, in said first cylinder group and in said second cylinder group.

18. The method of Claim 17 wherein said operating condition is an engine temperature.

19. The method of Claim 17 wherein said operating condition is engine speed.

20. The method of Claim 17 wherein said operating condition is engine load.

21. A method for determining a valve pattern to operate in an internal combustion engine operating in a multi-stroke cylinder mode, the method comprising:

25 determining an operating condition of an electromechanical valve;

operating at least two groups of cylinders, a first group operating in a first cylinder stroke mode, and a second group operating in a second cylinder stroke mode; and

30 determining a valve pattern to operate, based on said operating condition, in said first cylinder group and in said second cylinder group.

22. The method of Claim 21 wherein said operating condition is a temperature of a valve actuator coupled to at least one of said electromechanically actuated valves.

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23. A method for determining a number of valves to operate in an internal combustion engine operating in a multi-stroke cylinder mode, the method comprising:

10       determining an operating condition of an engine;  
          operating at least two groups of cylinders, a first group operating in a first cylinder stroke mode, and a second group operating in a second cylinder stroke mode; and

15       determining a valve pattern to operate, based on said operating condition, in said first cylinder group and determining a valve pattern to operate, based on said operating condition, in said second cylinder group that is different than the pattern of operating valves in said  
20       first group of cylinders.

24. A computer readable storage medium having stored data representing instructions executable by a computer to control an internal combustion engine of a vehicle,  
25       said storage medium comprising:

          instructions for determining an operating condition of said engine;

          instructions for operating at least one cylinder of said engine in a multi-stroke mode; and

30       instructions for determining a pattern of electromechanically actuated valves to operate, based on said operating condition, in said at least one cylinder operating in a multi-stroke mode.

25. A method for controlling valve patterns in at least a cylinder operating in a multi-stroke mode of an internal combustion engine, the method comprising:

operating a first valve pattern in said  
5 cylinder operating in a multi-stroke mode based at least on an engine operating condition; and

operating a second valve pattern in said cylinder operating in a multi-stroke mode based on a change in said engine operating condition.

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